FOTG Section V Page 1 of 5

# **Treatment Option Case Study - Hawaii**

(proposed management system)

### **Conservation Effects Worksheet**

<u>Cropland - Sugarcane</u> (land use and crop)

Resource Setting: Kauai, Hawaii

Soils - Kapaa silty clay

Rainfall 74 inches

Elevation - 360 feet

Unique situation - field located on ridge top next to stream and Kapaia reservoir is located above the field.

#### **Conservation Treatment Results:**

Harvested within a window of time when chances of intense rains are less likely to happen (5/14 to 10/1). In preparation to plant only subsoil, disc and harrow areas which were used as loading areas in field for the cane haul trucks. Use no-till methods of planting on rest of field. Plant across the general lay of the land. Allow the volunteer crop to establish to control erosion the first couple months when sugarcane has not established yet. Irrigate field from reservoir -drip irrigate.

#### **Resource Problems Before Treatment:**

Erosion is a problem; this is a highly erodible field. The field is close to a reservoir and stream. May have nutrient and herbicide problems.

ACTIONS (Kinds, Amounts, Timing)	EFFECTS (Effects of Continuing Bench System)	
Field Preparation		
Subsoil, disc, and harrow only areas of field where large cane haul trucks compacted soil in field.	Do this cross slope	
	Reduces fuel and time in preparing a field for planting	
No-till plant the seed pieces of sugarcane	Do this cross slope	
	Develop a no-till seeder which will allow for breaking up the soil, preparing a seedbed and planting the sugarcane.	
Band Calcium Metasilicate	Cut down use of Calcium Metasifcate; less pounds	
- Hawaii Cement CaSi03	needed per acre. Deliver to areas which are in root zone directly	
- Hawaiian Western Steel Slag		
Scheduled Harvesting - arrange to harvest and plant the sugarcane between the months of 4/15 to 10/1.	May have to go a couple of cropping cycles to get the field into the scheduled harvesting window of time.	
	If you have many fields, which have scheduled harvesting, you may not be able to do all of them in the window of time.	
Planting		
Fertilizer	Minimum amount of fertilizer is applied.	
Urea (46-0-0) applied in a band at planting.	Fertilizer is placed directly where it is readily available to plants	
Ammonium phosphate (11-52-0) is applied in a band at planting		
Calcium Metasilicate is also applied in band		
Pieces of sugarcane treated with fungicide. (Tilt used at 0.006 gals/acre)	Small amount of Tilt used. Only problem would be if vats used to dip seed pieces spill or leak.	

Ammonium Chloride

ACTIONS (Kinds, Amounts, Timing)	EFFECTS (Effects of Continuing Bench System)	
Planting		
Planting is done using a mechanical planter. Plant the rows across the general slope of the field.	May need initial help laying line of plant on cross slope	
	May have trouble keeping planter on hill and from rolling over if slope too steep	
	May have short rows rather than long rows going up and down the hill	
	Plantation tractor operators may not want to plant cross the slope	
	Will cut down on erosion	
Plant Maintenance		
Use less herbicide the first couple months to allow volunteer cover crop to sprout and cover the bare ground	Will cut down on erosion.	
	Will cut down on chemical used.  Will stunt growth of sugarcane and reduce tillering of sugarcane platns. The less tillers the less sugarcane - reduced yields.	
<ul> <li>Fertilizer</li> <li>Urea (46-0-0) applied as band over line every 4 to 6 weeks with rubber tire tractor or aircraft. Approximately 320 lbs/ac applied.</li> <li>Ammonium Phosphate (11-52-0) applied as bands along with seed pieces. Application is once a year. Approximately 200 lbs/ac is applied.</li> </ul>	May drift if applied by aircraft. Tractor may compact soil.  Direct application, minimizes waste of fertilizer	

ACTIONS (Kinds, Amounts, Timing)	EFFECTS (Effects of Continuing Bench System)	
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Herbicide and fertilizer is applied every 4 to 6 weeks		
Irrigation  Drip irrigation will be established in the field Drip tubing will follow the plant lines across the slope to make irrigation water distribution efficient	Irrigation will enable quicker establishment of sugarcane and quicker sugarcane cover.	
	The sugarcane will establish in a more uniform manner.	
	It will be expensive to install but the increase in yield will justify the cost of irrigation and it will pay for itself.	
	It may be bad because it will leach chemicals into the ground faster	
Pest Management		
Pest Management (595)	Good Practice.	
- Use biological control on insects		
Rodent Control		
Rodenticides are applied at 20 lbs/ac/crop cycle.	Rodenticides getting into the water bodies.	
They are applied when the sugarcane is: - 9 months old	Other animals besides the rats eat the rodenticide	
- 12 months old	Other animals eat the poisoned rats	
- 18 months		
Rodinticides used		
- ZINC PHOSPHIDE - 10 lbs/ac		
- PIVAL (spot applications) - ?? Ibs/ac		
Ripening the Sugarcane		
Growth regulators used	Usually applied by aircraft, may drift into	
- POLADO - 1lb./acre	water bodies	
- ETHREL - 1lb./acre		

ACTIONS (Kinds, Amounts, Timing)	EFFECTS (Effects of Continuing Bench System)	
Harvesting		
Burn excess dry leaves	Smoke can become a problem	
Push rake used to push sugarcane into windrow for easier harvesting	Push soil into wind rows also	
Load cane on truck	Destruction of soil structure when heavy trucks come into field	
Haul cane to mill	Carries lots of soil to the mill; especially when harvesting during wet weather	
Work towards harvesting within the scheduled harvesting window.		

## **Comments:**

Attempts should be made to look into the feasibility of ratoon or mechanical harvesting cane to reduce soil loss due to harvesting operation